CLAIMS

1. An electronic dB-to-linear gain conversion system, comprising:

an input for receiving a gain index signal representing a desired dB value, wherein the desired dB value is selected from a set having an integer number *S* of dB values;

a storage circuit for storing an integer number *V* of linear gain values; and

circuitry for producing a linear gain signal in response to the gain index signal and to one of the *V* linear gain values; and

wherein *V* is less than *S*.

2. The system of claim 1 wherein each linear gain value in the integer number *V* of linear gain values corresponds to a respective dB value in the set.

3. The system of claim 2 wherein each linear gain value in the integer number *V* of linear gain values equals ten raised to a power of a respective dB value in the set divided by 20.

4. The system of claim 1 wherein one linear gain value in the integer number *V* of linear gain values corresponds to a largest dB value in the set.

5. The system of claim 1:

wherein a uniform granularity *GR* exists between each successively larger dB value in the set; and

wherein $V=6/GR$.

6. The system of claim 1 wherein the circuitry for producing the linear gain signal comprises:

circuitry for selecting one linear gain value of the integer number *V* of linear gain values in response to the linear gain signal, wherein the selected linear gain corresponds to a given dB value in the set; and

circuitry for multiplying the selected one linear gain value times two raised to a power equal to an integer *N*, wherein the desired dB value is approximately the integer *N* times 6 apart from the given dB value.

7. The system of claim 6 wherein each linear gain value in the integer number *V* of linear gain values equals ten raised to a power of a respective dB value in the set divided by 20.

8. The system of claim 6:

wherein the selected one linear gain value comprises a binary number; and

wherein the circuitry for multiplying comprises circuitry for shifting the binary number the integer *N* times.

9. The system of claim 6:

wherein each linear gain value in the integer number *V* of linear gain values equals ten raised to a power of a respective dB value in the set divided by 20;

wherein the selected one linear gain value comprises a binary number; and

wherein the circuitry for multiplying comprises circuitry for shifting the binary number the integer *N* times.

10. The system of claim 1 wherein the circuitry for producing the linear gain signal comprises:

circuitry for selecting one linear gain value of the integer number *V* of linear gain values in response to the linear gain signal, wherein the selected linear gain corresponds to a given dB value in the set;

circuitry for multiplying the selected one linear gain value times two raised to a power equal to an integer *N*, wherein the desired dB value is approximately the integer *N* times 6 apart from the given dB value; and

circuitry for decoding the gain index signal to determine the integer *N*.

11. The system of claim 10:

wherein the gain index signal comprises a plurality of bits arranged in an order from a least significant bit to a most significant bit; and

wherein the integer *N* is represented in part or whole by the least significant bit of the gain index signal.

12. The system of claim 11 wherein the circuitry for selecting comprises circuitry for addressing the one linear address in the storage circuit in response to at least the most significant bit.

13. The system of claim 10:

wherein the circuitry for decoding comprises logic circuitry; and

wherein the circuitry for selecting comprises logic circuitry for decoding the gain index signal into an address for the storage circuit, wherein the address corresponds to the one linear gain value.

14. The system of claim 10:

wherein a uniform granularity *GR* exists between each successively larger dB value in the set;

wherein $V=6/GR$;

wherein the circuitry for decoding comprises circuitry for determining the integer *N* according to an equation that truncates the result of the gain index signal divided by the integer *V*; and

wherein the circuitry for selecting comprises circuitry for determining an address for the storage circuit in response to the gain index signal, wherein the address equals the gain index signal minus the product of the integer *N* times the integer *V*.

15. The system of claim 1 and further comprising circuitry for producing an audio signal in response to the linear gain signal.

16. The system of claim 1:

wherein each linear gain value in the integer number *V* of linear gain values corresponds to a respective dB value in the set;

wherein each linear gain value in the integer number *V* of linear gain values equals ten raised to a power of a respective dB value in the set divided by 20;

wherein one linear gain value in the integer number *V* of linear gain values corresponds to a largest dB value in the set.

17. The system of claim 16:

wherein a uniform granularity *GR* exists between each successively larger dB value in the set; and

wherein $V=6/GR$.

18. The system of claim 17 wherein the circuitry for producing the linear gain signal comprises:

circuitry for selecting one linear gain value of the integer number *V* of linear gain values in response to the linear gain signal, wherein the selected linear gain corresponds to a given dB value in the set; and

circuitry for multiplying the selected one linear gain value times two raised to a power equal to an integer *N*, wherein the desired dB value is approximately the integer *N* times 6 apart from the given dB value.

19. The system of claim 1:

wherein each linear gain value in the integer number *V* of linear gain values corresponds to a respective dB value in the set;

wherein each linear gain value in the integer number *V* of linear gain values equals ten raised to a power of a respective dB value in the set divided by 20; and

wherein at least one linear gain value in the integer number *V* of linear gain values equals a power of two.

20. A method of electronically converting a gain index signal representing a desired dB value, comprising:

receiving the gain index signal representing a desired dB value, wherein the desired dB value is selected from a set having an integer number *S* of dB values;

an integer number *V* of linear gain values; and

for producing a linear gain signal in response to the gain index signal and to one of the *V* linear gain values; and

wherein *V* is less than *S*.

21. The method of claim 20 wherein each linear gain value in the integer number *V* of linear gain values corresponds to a respective dB value in the set.

22. The method of claim 21 wherein each linear gain value in the integer number *V* of linear gain values equals ten raised to a power of a respective dB value in the set divided by 20.

23. The method of claim 20 wherein one linear gain value in the integer number *V* of linear gain values corresponds to a largest dB value in the set.

24. The method of claim 20:

wherein a uniform granularity *GR* exists between each successively larger dB value in the set; and

wherein $V=6/GR$.

25. The method of claim 20 wherein the step of producing the linear gain signal comprises:

selecting one linear gain value of the integer number *V* of linear gain values in response to the linear gain signal, wherein the selected linear gain corresponds to a given dB value in the set; and

multiplying the selected one linear gain value times two raised to a power equal to an integer *N*, wherein the desired dB value is approximately the integer *N* times 6 apart from the given dB value.

26. The method of claim 25 wherein each linear gain value in the integer number *V* of linear gain values equals ten raised to a power of a respective dB value in the set divided by 20.

27. The method of claim 25:

wherein the selected one linear gain value comprises a binary number; and

wherein the step of multiplying comprises shifting the binary number the integer *N* times.

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